AGILENT TECHNOLOGIES, INC.
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ATTORNEY DOCKET NO. **10021105-1**

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s): Rusell W. Gruhike

Serial No.: 10/651,677 **Examiner:** J. Vannucci

Filing Date: August 29, 2003 **Group Art Unit:** 2828

Title: WAVELENGTH TUNING AN EXTERNAL CAVITY LASER WITHOUT MECHANICAL MOTION

COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) **$500.00**.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

☐ (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)(1)-(5)) for the total number of months checked below:

☐	one month	$ 120.00
☐	two months	$ 450.00
☐	three months	$1020.00
☐	four months	$1590.00

☐ The extension fee has already been filled in this application.

☒ (b) Applicant believes that no extension of term is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **50-1078** the sum of $500.00. At any time during the pendency of this application, please charge any fees required or credit any overpayment to Deposit Account **50-1078** pursuant to 37 CFR 1.25.

A duplicate copy of this transmittal letter is enclosed.

(X) I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV628782502US, in an envelope addressed to: MS Appeal Brief, Director for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Date of Deposit: 04/17/2006 **OR**

☐ I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office on the date shown below.

Date of Facsimile:

Typed Name: Phyllis Ewing

Signature: _____

Respectfully submitted,

Rusell W. Gruhike

By _____

Michael A. Papalas
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Date: 04/17/2006

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04-18-06

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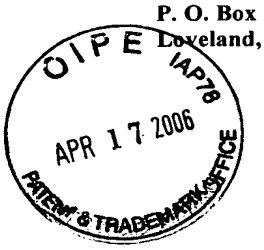
PATENT APPLICATION
ATTORNEY Docket No.: 10021105-1



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Russell W. Gruhlke

Application No.: 10/651,677 Confirmation No.: 9310

Filed: August 29, 2003 Art Unit: 2828

For: WAVELENGTH TUNING AN EXTERNAL CAVITY LASER WITHOUT MECHANICAL MOTION Examiner: J. Vannucci

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed within two months of the Notice of Appeal filed in this case on February 15, 2006, and is in furtherance of said Notice of Appeal.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1205.02:

I.	Real Party In Interest
II.	Related Appeals and Interferences
III.	Status of Claims
IV.	Status of Amendments
V.	Summary of Claimed Subject Matter
VI.	Grounds of Rejection to be Reviewed on Appeal
VII.	Argument

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I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

Agilent Technologies, Inc.

II. RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 28 claims pending in application.

B. Current Status of Claims

1. Claims pending: 1-28
2. Claims canceled: None
3. Claims withdrawn from consideration but not canceled: None
4. Claims allowed: None
5. Claims rejected: 1-28
6. Claims objected to: None

C. Claims On Appeal

The claims on appeal are claims 1-28

IV. STATUS OF AMENDMENTS

Appellant has not amended the claims. Therefore, the claims enclosed herein as Appendix A are the current claims.

V. SUMMARY OF CLAIMED SUBJECT MATTER

According to claim 1, an optical system comprises a dispersing element (103, Fig. 1) operable to disperse a light beam at a wavelength-dependent angle (θ, pg. 4, par. 16, lines 4-14) and a variable index electro-optic device (110, Fig. 1) positioned in the path of a light beam, the variable index electro-optic device comprising a variable index electro-optic element (110) having an electrically-variable refractive index, such that the variable index electro-optic element is operable to perform wavelength-selective filtering of the light beam, dependent on the value of an applied control voltage (pg. 5, par. 17, line 1 - par. 18, line 8; pg. 7, par. 23, lines 1-8).

According to claim 3, the variable index electro-optic element is operable to perform wavelength selective filtering by varying the critical angle for total internal optical reflection (TIR) at an interface of the electro-optic element in response to the applied control voltage (pg. 7, par. 23, lines 1-8).

According to claim 4, the variable index electro-optic device comprises a first electro-optic element (110, Fig. 1) and a second electro-optic element (120, Fig. 1), through which a light beam propagates sequentially (pg. 6, par. 20, lines 1-4). The first electro-optic element is operable tunably to partially segregate light of undesired wavelengths shorter than a desired wavelength from the light of a desired wavelength at a TIR interface, dependent on the value of a first applied control voltage (pg. 6, par. 19, lines 8-13), and the second electro-optic element is operable tunably to partially segregate light of undesired wavelengths longer than the desired wavelength from the light of the desired wavelength at a TIR interface, dependent on the value of a second applied control voltage (pg. 6, par. 20, lines 4-14).

According to claim 12, an optical feedback element comprises a retro-reflector (105, Fig. 1) and the variable index electro-optic element (110, Fig. 1) is disposed within an ECL (100, Fig. 1) between the dispersing element (103, Fig. 1) and the retro-reflector.

According to claim 13, the variable index electro-optic device comprises a first electro-optic element (110, Fig. 2) and a second electro-optic element (210, Fig. 2) through which a light beam propagates sequentially (Fig. 2). The first electro-optic element is operable to perform wavelength selective filtering by varying the critical angle for TIR in response to a first applied control voltage (pg. 6, par. 19, lines 8-13), and the second electro-optic element is operable to perform selective tuning of the mode number of a generated light beam by changing the effective optical path length in the second electro-optic element in response to a second applied control voltage (pg. 6, par. 26, lines 1-7).

According to claim 14, an ECL (100, Fig. 1) further comprises a collimating element (102, Fig. 1) disposed between an optical gain medium (101, Fig. 1) and a dispersing element (103, Fig 1).

According to claim 16, a method of tunable wavelength filtering without mechanical motion comprises receiving a light beam of wavelength within a range of wavelengths (pg. 4, par. 15, lines 1-4), dispersing said light beam at a wavelength-dependent angle (pg. 4, par. 16, lines 4-14), propagating said light beam through an electro-optic device (110, Fig. 1) comprising an electrically-variable refractive index electro-optic element (110, pg. 5, par. 16, lines 7-9), and applying a control voltage to said electro-optic device to cause tunable wavelength filtering dependent on said control voltage (pg. 5, par. 17, lines 1-9).

According to claim 18, a method of tunable wavelength filtering without mechanical motion further comprises varying the critical angle for total internal reflection (TIR) at an interface of said variable index electro-optic element in response to applying said control voltage (pg. 5, par. 18, lines 1-8), totally internally reflecting light of desired wavelength in said light beam at said interface in response to varying said critical angle (pg. 6, par. 19, lines 11-13), and partially segregating light of undesired wavelengths in said light beam from said light of said desired wavelength at said interface in response to varying said critical angle (pg. 6, par. 19, lines 11-17).

According to claim 19, an electro-optic device comprises a first variable index electro-optic element (110, Fig. 1) and a second variable index electro-optic element (120, Fig. 1), and tunable wavelength filtering comprises applying a first control voltage to the first

variable index electro-optic element (pg. 5, par. 17, lines 2-4), applying a second control voltage to said second variable index electro-optic element (pg. 6, par. 20, lines 9-11), propagating said light beam sequentially through said first variable index electro-optic element and said second variable index electro-optic element (pg. 6, par. 20, lines 1-4), tunably partially segregating light of undesired wavelengths shorter than said desired wavelength at a TIR interface of said first variable index electro-optic element in response to applying said first control voltage (pg. 6, par. 19, lines 8-13), and tunably partially segregating light of undesired wavelengths longer than said desired wavelength at a TIR interface of said second variable index electro-optic element in response to applying said second control voltage (pg. 6, par. 20, lines 4-14).

According to claim 22, an optical feedback element comprises a retro-reflector (105, Fig. 1) and a light beam is retro-reflected within an ECL (100, Fig. 1) through a variable index electro-optic element (110, Fig. 1) and a dispersing element (130, Fig. 1) to a gain medium (101, Fig 1; pg. 7, par. 21, lines 4-6).

According to claim 24, a method of tunable wavelength filtering without mechanical motion further comprises varying the critical angle for TIR at an interface (111, Fig. 1) of a variable index electro-optic element (110, Fig. 1) in response to applying a control voltage (pg. 6, par. 19, lines 8-13), totally internally reflecting light of desired wavelength in a light beam at the interface in response to varying said critical angle (pg. 6, par. 19, lines 8-13), partially segregating light of undesired wavelengths in the light beam from light of a desired wavelength at the interface in response to varying said critical angle (pg. 6, par. 19, lines 13-16), and causing the light beam within an ECL (100, Fig. 1) to oscillate at a desired tunable wavelength in response to said tunable wavelength filtering of the light beam (pg. 7, par. 23, lines 7-8).

According to claim 28, a method of tunable wavelength filtering without mechanical motion further comprises transforming the beam divergence of an emitted light beam (501, 501, Fig. 5) from a low divergence value to a higher divergence value prior to collimating (pg. 13, par. 38, line 6 – pg. 14, par. 38, line 3).

VI. GROUNDS OF OBJECTION TO BE REVIEWED ON APPEAL

Whether claims 1-3, 5 and 16-18 properly stand rejected under 35 U.S.C. § 102(b) as being anticipated by US Patent No. 6,041,071 to Tayebati ("Tayebati").

Whether claims 4 and 19-20 properly stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tayebati in view of US Patent No. 6,901,088 to Li et al. ("Li").

Whether claims 6-12, 14-15, 21-25 and 27-28 properly stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tayebati in view of US Patent No. 6,205,159 to Sesko et al. ("Sesko").

Whether claims 13 and 26 properly stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tayebati in view of Sesko and further in view of Li..

VII. ARGUMENT

A. First Ground of Rejection

Claims 1-3, 5 and 16-18 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Tayebati. To anticipate a claim under 35 U.S.C. § 102, a reference must teach every element of the claim. *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). As discussed below, Tayebati fails to teach every element of the claims to which it is applied.

1. Independent Claim 1 and Dependent Claims 2 and 5

Independent claim 1 recites "a dispersing element operable to disperse a light beam at a wavelength-dependent angle ...." Tayebati does not disclose at least this aspect of claim 1. That is, Tayebati does not disclose dispersing a light beam at a wavelength-dependent angle. The Final Office Action, dated December 19, 2005 ("Final Action") points to element 120 in Figures 1 and 2 of Tayebati as meeting this element of the claim. However, element 120 of Tayebati uses a distributed Bragg reflector (DBR) 151, which operates at a purely normal angle of incidence with respect to both incoming and outgoing light. Tayebati, col. 7, lines 44-49. See Figure 1 of Tayebati, showing only straight input and output paths, and Figure 2 of Tayebati showing a single propagation channel that is used by all wavelengths. The angle

of a light beam exiting DBR 151 is entirely independent of its wavelength. Therefore, element 120 can not meet the requirement of a dispersing element operable to disperse a light beam at a wavelength-dependent angle, and Tayebati does not disclose the above-recited aspect of claim 1.

Claim 1 also recites "said variable index electro-optic element is operable to perform wavelength-selective filtering of said light beam ...." The Final Action points to element 110 in Figures 1 and 2 of Tayebati as meeting this aspect of the claim. However, element 110 of Tayebati is merely a phase shifter that shifts the reflected wavelength that is selected by DBR 151 in order to match the phase condition of the laser. Tayebati, col. 12, lines 35-45. That is, element 110 of Tayebati does not perform wavelength-selective filtering as required by the claim.

Tayebati does not disclose every limitation of claim 1. Therefore, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 1 be reversed. Claims 2 and 5 depend from claim 1 and are thus patentable for, at least, the same reasons as independent claim 1. Therefore, Appellant also respectfully requests reversal of the 35 U.S.C. § 102(b) rejections of claims 2 and 5.

2. Dependent Claim 3

Claim 3 recites "said variable index electro-optic element is operable to perform said wavelength selective filtering by varying the critical angle for total internal optical reflection (TIR) at an interface of said electro-optic element in response to said applied control voltage." Tayebati does not disclose at least this element of claim 3. That is, Tayebati does not disclose filtering by varying the critical angle for TIR. The Final Action merely points to element 110 and alleges that Tayebati discloses this aspect of claim 3. However, the Final Action does not suggest where Tayebati discloses varying critical angles or segregating light in response to varying a critical angle.

Appellant respectfully asserts that element 110 does not perform wavelength selective filtering by varying the critical angle for TIR, as required by claim 3. Additionally, claim 3 depends from claim 1, and thus inherits all limitations of claim 1. As shown above, Tayebati does not disclose every limitation of claim 1. Therefore, Tayebati does not disclose every

limitation of claim 3, either. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 3 be reversed.

3. Independent Claim 16 and Dependent Claim 17

Independent claim 16 recites "dispersing said light beam at a wavelength-dependent angle ...." Tayebati does not disclose at least this aspect of claim 16. That is, Tayebati does not disclose dispersing a light beam at a wavelength-dependent angle. The Final Action points to element 120 in Figures 1 and 2 of Tayebati as meeting this element of the claim. However, as shown above, element 120 of Tayebati uses a distributed Bragg reflector (DBR) 151, which operates at a purely normal angle of incidence with respect to both incoming and outgoing light. Figure 1 of Tayebati, clearly shows only straight input and output paths, and Figure 2 of Tayebati shows a single propagation channel that is used by all wavelengths. The angle of a light beam exiting DBR 151 is entirely independent of its wavelength, and element 120 can not meet the above-recited aspect of claim 16.

Claim 16 also recites "applying a control voltage to said electro-optic device to cause tunable wavelength filtering dependent on said control voltage ...." The Final Action points to element 110 in Figures 1 and 2 of Tayebati as meeting this aspect of the claim. However, element 110 of Tayebati is merely a phase shifter that shifts the reflected wavelength that is selected by DBR 151 in order to match the phase condition of the laser. Tayebati, col. 12, lines 35-45. Element 110 of Tayebati does not perform wavelength filtering as required by the claim.

Tayebati does not disclose every limitation of claim 16. Therefore, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 16 be reversed. Claim 17 depends from claim 16 and is thus patentable for, at least, the same reasons as independent claim 16. Therefore, Appellant also respectfully requests reversal of the 35 U.S.C. § 102(b) rejection of claim 17.

4. Dependent Claim 18

Claim 18 recites "varying the critical angle for total internal reflection (TIR) ... and partially segregating light of undesired wavelengths in said light beam from said light of said

desired wavelength at said interface in response to varying said critical angle." Tayebati does not disclose at least this aspect of claim 18. That is, Tayebati does not disclose segregating light at an interface in response to varying the critical angle for TIR. The Final Action merely alleges that Tayebati discloses this aspect of claim 18, citing the left wall of element 120 as showing TIR, but does not cite any passage of Tayebati mentioning varying critical angles or segregating light in response to varying a critical angle.

Appellant notes that the Final Office Action identifies element 120 as the electro-optic element of claim 18. However, for claim 16, the Final Action identifies element 120 as a dispersing element and element 110 as the electro-optic element. Since claim 18 depends from claim 16, the Office Action has thus identified element 120 simultaneously as both a dispersing element and the electro-optic element, and has identified the electro-optic element as both elements 110 and 120.

Appellant respectfully asserts that element 120 does not partially segregate light of undesired wavelengths at an interface in response to varying the critical angle TIR, as required by claim 18. Additionally, claim 18 depends from claim 16, and thus inherits all limitations of claim 16. As shown above, Tayebati does not disclose every limitation of claim 16. Therefore, Tayebati does not disclose every limitation of claim 18, either. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 18 be reversed.

B. Second Ground of Rejection

Claims 4 and 19-20 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tayebati in view of Li. In order to establish obviousness under 35 U.S.C. § 103(a), three criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the references or combine reference teachings. Second, there must be a reasonable expectation of success. Third, the applied art must teach or suggest all the claim limitations. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991); *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Applicant asserts that the rejections do not satisfy these criteria.

5. Dependent Claim 4

Claim 4 recites "said first electro-optic element operable tunably to partially segregate light of undesired wavelengths ... at a TIR interface ... and said second electro-optic element operable tunably to partially segregate light of undesired wavelengths ... at a TIR interface." The proffered combination of Tayebati and Li does not teach or suggest this aspect of claim 4. The Final Action admits that Tayebati does not teach this aspect of claim 4, and points to elements 110 and 114 in Figure 6 of Li, alleging that these elements meet the recited limitations. However, Li does not teach or suggest that either 110 or 114 segregates light at a TIR interface. Rather, elements 110 and 114 of Li operate by adjusting optical path length. Li, col. 15, lines 34-39.

Additionally, claim 4 depends from claim 3, and thus inherits all limitations of claim 3. As shown above, Tayebati does not teach or suggest every limitation of claim 3. Li is not relied upon to supply the missing limitations of claim 3. Therefore, the proffered combination of Tayebati and Li does not teach or suggest every limitation of claim 4. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 4 be reversed.

6. Dependent Claims 19 and 20

Claim 19 recites "tunably partially segregating light ... at a TIR interface of said first variable index electro-optic element ... and tunably partially segregating light ... at a TIR interface of said second variable index electro-optic element ...." The proffered combination of Tayebati and Li does not teach or suggest this aspect of claim 19. The Final Action admits that Tayebati does not teach this aspect of claim 19, and points to elements 110 and 114 in Figure 6 of Li, alleging that these elements meet the recited limitations. However, Li does not teach or suggest that either 110 or 114 segregates light at a TIR interface. Rather, elements 110 and 114 of Li operate by adjusting optical path length. Li, col. 15, lines 34-39.

Additionally, claim 19 depends from claim 18, and thus inherits all limitations of claim 18. As shown above, Tayebati does not teach or suggest every limitation of claim 18. Li is not relied upon to supply the missing limitations of claim 18. Therefore, the proffered combination of Tayebati and Li does not teach or suggest every limitation of claim 19.

Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 19 be reversed.

Claim 20 depends from claim 19, and thus inherits all limitations of claim 19. As shown above, the proffered combination of Tayebati and Li does not teach or suggest every limitation of claim 19. Therefore, the proffered combination of Tayebati and Li does not disclose every limitation of claim 20. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 20 be reversed.

C. Third Ground of Rejection

Claims 6-12, 14-15, 21-25 and 27-28 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tayebati in view of Sesko. Applicant asserts that the rejections do not satisfy the criteria required for obviousness.

1. Dependent Claims 6-11 and 14-15

Claims 6-11 and 14-15 depend from claim 1, and thus inherits all limitations of claim 1. As shown above, Tayebati does not teach or suggest every limitation of claim 1. Li is not relied upon to supply the missing limitations of claim 1. Therefore, the proffered combination of Tayebati and Sesko does not teach or suggest every limitation of claims 6-11 and 14-15. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claims 6-11 and 14-15 be reversed.

2. Dependent Claim 12

Claim 12 recites "said optical feedback element comprises a retro-reflector ...." The proffered combination of Tayebati and Sesko does not teach or suggest this aspect of claim 19. The Final Action admits that Tayebati does not teach this aspect of claim 12, and points to element 11 of Sesko, alleging that this element is a retro-reflectors. However, Sesko clearly identifies element 11 as a "flat mirror," which is not a retro-reflector as required by the claim. Sesko, col. 11, line 46.

Additionally, claim 12 depends from claim 1, and thus inherits all limitations of claim 1. As shown above, Tayebati does not teach or suggest every limitation of claim 1. Sesko is

not relied upon to supply the missing limitations of claim 1. Therefore, the proffered combination of Tayebati and Sesko does not teach or suggest every limitation of claim 12. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 12 be reversed.

3. Dependent Claims 21, 23, 25 and 27

Claims 21, 23, 25 and 27 depend from claim 16, and thus inherits all limitations of claim 16. As shown above, Tayebati does not teach or suggest every limitation of claim 16. Li is not relied upon to supply the missing limitations of claim 16. Therefore, the proffered combination of Tayebati and Sesko does not teach or suggest every limitation of claims 21, 23, 25 and 27. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claims 21, 23, 25 and 27 be reversed.

4. Dependent Claim 22

Claim 22 recites "said optical feedback element comprises a retro-reflector ...." The proffered combination of Tayebati and Sesko does not teach or suggest this aspect of claim 19. The Final Action admits that Tayebati does not teach this aspect of claim 22, and points to element 11 of Sesko, alleging that this element is a retro-reflectors. However, Sesko clearly identifies element 11 as a "flat mirror," which is not a retro-reflector as required by the claim. Sesko, col. 11, line 46.

Additionally, claim 22 depends from claim 16, and thus inherits all limitations of claim 16. As shown above, Tayebati does not teach or suggest every limitation of claim 16. Sesko is not relied upon to supply the missing limitations of claim 16. Therefore, the proffered combination of Tayebati and Sesko does not teach or suggest every limitation of claim 22. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 22 be reversed.

5. Dependent Claim 24

Claim 24 recites "varying the critical angle for TIR at an interface of said variable index electro-optic element ... totally internally reflecting light of desired wavelength ... partially segregating light ... at said interface in response to varying said critical angle ...."

The proffered combination of Tayebati and Sesko does not teach or suggest this aspect of claim 24. Tayebati does not disclose segregating light at an interface in response to varying the critical angle for TIR. The Final Action merely alleges that Tayebati discloses this aspect of claim 24, citing the left wall of element 120 as showing TIR, but does not cite any passage of Tayebati mentioning varying critical angles or segregating light at an interface in response to varying a critical angle. Sesko is not relied upon for this aspect of the claim.

Additionally, claim 24 depends from claim 16, and thus inherits all limitations of claim 16. As shown above, Tayebati does not teach or suggest every limitation of claim 16. Sesko is not relied upon to supply the missing limitations of claim 16. Therefore, the proffered combination of Tayebati and Sesko does not teach or suggest every limitation of claim 24. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 24 be reversed.

6. Dependent Claim 28

Claim 28 recites "transforming the beam divergence of said emitted light beam from a low divergence value to a higher divergence value prior to said collimating." The proffered combination of Tayebati and Sesko does not teach or suggest this aspect of claim 28. Tayebati does not disclose transforming beam divergence. The Final Action merely alleges that Tayebati discloses this aspect of claim 28, pointing to the space between 30 and 35 of Figure 1, but does not cite any passage of Tayebati mentioning transforming beam divergence. Applicant respectfully asserts that showing a beam with a constant divergence, as in Tayebati, does not teach or suggest transforming beam divergence, as required by the claim. Sesko is not relied upon for this aspect of the claim.

Additionally, claim 28 depends from claim 16, and thus inherits all limitations of claim 16. As shown above, Tayebati does not teach or suggest every limitation of claim 16. Sesko is not relied upon to supply the missing limitations of claim 16. Therefore, the proffered combination of Tayebati and Sesko does not teach or suggest every limitation of claim 28. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 28 be reversed.

D. Fourth Ground of Rejection

Claims 13 and 26 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Tayebati in view of Sesko and further in view of Li.. Applicant asserts that the rejections do not satisfy the criteria required for obviousness.

1. Dependent Claim 13

Claim 13 depends from claim 1, and thus inherits all limitations of claim 1. As shown above, Tayebati does not teach or suggest every limitation of claim 1. Neither Sesko nor Li is not relied upon to supply the missing limitations of claim 1. Therefore, the proffered combination of Tayebati , Sesko and Li does not teach or suggest every limitation of claim 13. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 13 be reversed.

2. Dependent Claim 26

Claim 26 depends from claim 16, and thus inherits all limitations of claim 16. As shown above, Tayebati does not teach or suggest every limitation of claim 16. Neither Sesko nor Li is not relied upon to supply the missing limitations of claim 16. Therefore, the proffered combination of Tayebati , Sesko and Li does not teach or suggest every limitation of claim 26. Accordingly, Appellant respectfully requests that the 35 U.S.C. § 102(b) rejection of claim 26 be reversed.

VIII. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A. As indicated above, Appellant has not amended the claims, and therefore, the claims enclosed herein are current..

IX. EVIDENCE

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the examiner is being submitted, hence the attached Appendix B is blank.

X. RELATED PROCEEDINGS

No related proceedings are referenced in II. above, and copies of decisions in related proceedings are not provided, hence the attached Appendix C is blank.

Dated: 04/17/2006

Respectfully submitted,

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV 628782502 US, on the date shown below in an envelope addressed to: MS Appeal Brief - Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

Dated: 04/17/2006

Signature: _____
(Phyllis Ewing)

By _____
Michael A. Papalas
Registration No.: 40,381
(214) 855-8186
(214) 855-8200 (Fax)
Attorney for Applicant

APPENDIX A

Claims Involved in the Appeal of Application Serial No. 10/651,677

1. An optical system, comprising:

a dispersing element operable to disperse a light beam at a wavelength-dependent angle; and

a variable index electro-optic device positioned in the path of said light beam, said variable index electro-optic device comprising a variable index electro-optic element having an electrically-variable refractive index, such that said variable index electro-optic element is operable to perform wavelength-selective filtering of said light beam, dependent on the value of an applied control voltage.

2. The optical system of claim 1 wherein said variable index electro-optic element is operable to perform said wavelength-selective filtering function selected from the group consisting of short wavelength pass filtering, long wavelength pass filtering, and bandpass wavelength filtering.

3. The optical system of claim 1 wherein said variable index electro-optic element is operable to perform said wavelength selective filtering by varying the critical angle for total internal optical reflection (TIR) at an interface of said electro-optic element in response to said applied control voltage.

4. The optical system of claim 3 wherein said variable index electro-optic device comprises a first said electro-optic element and a second said electro-optic element, through which said light beam propagates sequentially;

said first electro-optic element operable tunably to partially segregate light of undesired wavelengths shorter than a desired wavelength from said light of said desired wavelength at a TIR interface, dependent on the value of a first applied control voltage; and

said second electro-optic element operable tunably to partially segregate light of undesired wavelengths longer than said desired wavelength from said light of said desired wavelength at a TIR interface, dependent on the value of a second applied control voltage.

5. The optical system of claim 1 wherein said variable index electro-optic device comprises an electro-optic material.

6. The optical system of claim 5 wherein said variable index electro-optic device comprises a liquid crystal material.

7. The optical system of claim 6 wherein said variable index electro-optic element comprises a layered structure, wherein a layer of liquid crystal material is disposed between layers of dielectric material.

8. The optical system of claim 1 wherein:

said system constitutes part of an external cavity laser (ECL) operable to generate a light beam at a single tunable wavelength dependent on said applied control voltage; and

said ECL additionally comprises:

an optical feedback element; and

an optical gain medium operable to generate said light beam at a wavelength within a range of wavelengths by stimulated emission and disposed to direct said light beam toward said dispersing element and said optical feedback element.

9. The optical system of claim 8 wherein said ECL is operable to tune said tunable wavelength by changing the effective optical path length in said variable index electro-optic element, dependent on said value of said applied control voltage, such that the mode number of said light beam generated in said ECL is electrically tuned.

10. The optical system of claim 9 wherein said variable index electro-optic element is disposed between said gain medium and said dispersing element.

11. The optical system of claim 8 wherein said ECL is operable to generate a light beam at said single tunable wavelength by varying the critical angle for total internal optical reflection (TIR) at an interface of said variable index electro-optic element in response to said value of said applied control voltage.

12. The optical system of claim 8 wherein said optical feedback element comprises a retro-reflector and wherein said variable index electro-optic element is disposed within said ECL between said dispersing element and said retro-reflector.

13. The optical system of claim 8 wherein said variable index electro-optic device comprises a first said electro-optic element and a second said electro-optic element through which said light beam propagates sequentially;

said first electro-optic element operable to perform said wavelength selective filtering by varying the critical angle for TIR in response to a first applied control voltage; and

said second electro-optic element operable to perform said selective tuning of the mode number of said generated light beam by changing the effective optical path length in said second electro-optic element in response to a second applied control voltage.

14. The optical system of claim 8 wherein said ECL further comprises a collimating element disposed between said optical gain medium and said dispersing element.

15. The optical system of claim 14 wherein said ECL further comprises an optical relay element disposed between said optical gain medium and said collimating element.

16. A method of tunable wavelength filtering without mechanical motion, said method comprising:

receiving a light beam of wavelength within a range of wavelengths;

dispersing said light beam at a wavelength-dependent angle;

propagating said light beam through an electro-optic device comprising an electrically-variable refractive index electro-optic element; and

applying a control voltage to said electro-optic device to cause tunable wavelength filtering dependent on said control voltage.

17. The method of claim 16 wherein applying said control voltage causes tunable wavelength filtering selected from the group consisting of short wavelength pass filtering, long wavelength pass filtering, and bandpass wavelength filtering.

18. The method of claim 16 further comprising:

varying the critical angle for total internal reflection (TIR) at an interface of said variable index electro-optic element in response to applying said control voltage;

totally internally reflecting light of desired wavelength in said light beam at said interface in response to varying said critical angle; and

partially segregating light of undesired wavelengths in said light beam from said light of said desired wavelength at said interface in response to varying said critical angle.

19. The method of claim 18 wherein said electro-optic device comprises a first variable index electro-optic element and a second variable index electro-optic element, and said tunable wavelength filtering comprises:

applying a first control voltage to said first variable index electro-optic element;

applying a second control voltage to said second variable index electro-optic element;

propagating said light beam sequentially through said first variable index electro-optic element and said second variable index electro-optic element;

tunably partially segregating light of undesired wavelengths shorter than said desired wavelength at a TIR interface of said first variable index electro-optic element in response to applying said first control voltage; and

tunably partially segregating light of undesired wavelengths longer than said desired wavelength at a TIR interface of said second variable index electro-optic element in response to applying said second control voltage.

20. The method of claim 19 wherein said first control voltages and said second control voltage have values independent of one another.

21. The method of claim 16 wherein said tunable wavelength filtering, said receiving, said dispersing, and said propagating occur within an external cavity laser (ECL), said ECL comprising an optical gain medium, a dispersing element, an optical feedback element, and a variable index electro-optic element.

22. The method of claim 21 wherein said optical feedback element comprises a retro-reflector and wherein said light beam is retro-reflected within said ECL through said variable index electro-optic element and said dispersing element to said gain medium.

23. The method of claim 21 further comprising:

varying the effective optical path length through said variable index electro-optic element in response to a variable control voltage applied to said variable index electro-optic element; and

causing said light beam to oscillate within said ECL at a desired tunable wavelength in response to said varying optical path length, such that the mode number of said oscillating light beam within said ECL is electrically tuned.

24. The method of claim 21 further comprising:

varying the critical angle for TIR at an interface of said variable index electro-optic element in response to applying said control voltage;

totally internally reflecting light of desired wavelength in said light beam at said interface in response to varying said critical angle;

partially segregating light of undesired wavelengths in said light beam from said light of said desired wavelength at said interface in response to varying said critical angle; and

causing said light beam within said ECL to oscillate at a desired tunable wavelength in response to said tunable wavelength filtering of said light beam.

25. The method of claim 16 wherein said variable index electro-optic element comprises a layer of liquid crystal material disposed between layers of dielectric material.

26. The method of claim 16 wherein said control voltage has a value determined in response to a feedback control signal.

27. The method of claim 16 wherein said receiving said light beam comprises:

emitting said light beam; and

collimating said emitted light beam prior to said dispersing.

28. The method of claim 27 further comprising transforming the beam divergence of said emitted light beam from a low divergence value to a higher divergence value prior to said collimating.

APPENDIX B

Evidence: None

APPENDIX C

Related Proceedings: None